DOCUMENT RESUME

ED 157 759 SE 024 761

AUTHOR Smith, John; And Others
TITLE The Thumbs Up Ecology Curriculum: A Fun Group of School Site Activities for Sixth Graders.
INSTITUTION Florida State Dept. of Education, Tallahassee. Office of Environment Education.
PUB DATE 75
NOTE 44p.; Contains occasional light and broken type

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Biological Sciences; Botany; *Conservation Education; Ecology; *Elementary Education; Energy; *Environmental Education; *Instructional Materials; Land Use; Trees; Zoology

ABSTRACT

This guide is a collection of "fun" school site activities for sixth graders. Some of the topics covered are: animals, trees, energy and lifestyle, land use and you, energy conservation, and car-pooling. Each section offers both introductory information about the topic as well as questions to ponder such as what, so what, now what, and another way to look at it. (Author/RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED157759

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

David LaHart

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

THE THUMBS UP ECOLOGY CURRICULUM

A Fun Group of School Site

Activities For Sixth Graders

SE 024 761

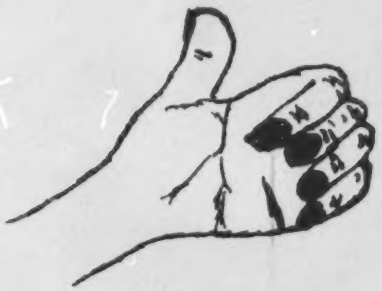
THE THUMBS UP ECOLOGY CURRICULUM

A Fun Group of School Site

Activities For Sixth Graders

Designed by:

Teacher Name	Name of School
John Smith	Howard Middle
Lari Payne	Lake Weir Middle
Judy Astor	Lake Weir Middle
Quinn Wiggins	Ft. King Middle
Anne Butler	Dunnellon Middle
Gayle McBride	Howard Middle
Fran Calderone	Osceola Middle



With a little help from:

John Bogart, Workshop Coordinator
David D. LaHart, Environmental Education Project
Florida State University

This curriculum development workshop and field test was funded by an environmental education mini-grant from the Florida Department of Education's Office of Environmental Education, C. Richard Tillis, Director. The workshop participants and the sixth grade children of Marion County thank the Department for making this opportunity available.

The Thumbs Up Ecology Curriculum? I agree, the title is weird, but the contents are great! The title has special meaning for the extremely capable writing team that produced these activities for all of us. A sincere thanks to this team for their enthusiasm and their accomplishment.

We encourage you to join us in the use of these materials and to assist in their improvement by your individual modification and expansion of activities in your classroom.

Special thanks are extended to Mr. Springer, Mrs. Moody, Mrs. Ewan, Mrs. Petteway, Mr. Harris and the sixth grade students at Ft. King Middle School that allowed us to field test our work and provide activities which have proven to be valid for classroom use for sixth grade students.

Assume a "thumbs up" philosophy and implement some of these activities in your classroom. Why wait for tomorrow?

Have a good day!

John Bogart, Environmental Education

Mr. William S. Fish, Supt.
Marion County Schools
Ocala, Florida

UNIT TOPIC: ANIMALS

INTRODUCTION

One of the most rewarding qualities of life is the beauty and joy other life provides. Can you possibly imagine what Marion County would be like without birds and deer and frogs and even snakes? We are fortunate to have many kinds of animals that provide us food and clothing. Other animals like dogs and cats provide us with company. Some animals do some kinds of work for us. Did you ever think about all the litter clean-up that ants do for us? Insects are very important to plants and animals too. The science of ecology studies how animals and plants are related to each other. If you look close enough you can find many of these relationships right on your school campus.

In this unit, there are some activities that will help you learn about the animals on your school grounds: animals that lived there in the past and animals that will live there in the future. How you take care of your school campus and how you take care of Marion County will determine how many and what kinds of animals we will have in the future.

WHAT? Will animals be the same 100 years from now?

SO WHAT? Take a 10 minute walk on your campus and find as many animals as you can that live there now.

1. Will there be animals 100 years from now?
2. Will there be food for animals to eat?
3. Will there be places for the animals to live or hide?
4. Will there be air for the animal to breathe?
5. Will there be predators or prey?

Teacher Note

You might like to provide additional materials to be used in the construction of their "animal"

a. sewing thread
b. glue
c. pipe cleaners
d. yarn

NOW WHAT?

Using natural materials, construct an animal that you think can survive in the environment 100 years from now.

1. What will it eat?
2. Where will it live?
3. What eats it?
4. How does it reproduce?
5. Does it have a name?

ANOTHER WAY TO LOOK AT IT:

Pretend you are your animal. Explain how you feel about what the environment will be when your offspring grow up.

WHAT? Animals: How plentiful is their food supply?
How far can they travel in 1 minute?

GRASSHOPPER

Area	Distance
Thick grass	
Thin grass	
Medium grass	
No grass	

Teacher Note:
You may want to make a grid and count random plots to project the grass in the total area.

CRICKET

Area	Distance
Thick grass	
Thin grass	
Medium grass	
No grass	

SO WHAT?

1. Measure off 1 sq. meter (mark with string)
2. Count all the grass plants in this area.
3. Catch one grasshopper.
4. Catch one cricket.
5. Put the cricket and grasshopper on a starting point (use a nail).
6. Let the cricket and grasshopper travel for 1 minute.
7. Measure the distance that the cricket and grasshopper traveled.
8. Repeat your experiment in another area with a different amount of grass.

NOW WHAT?

What conclusions can you draw from your experiment?

Compare your results with other groups. Explain any differences you find.

ANOTHER WAY TO LOOK AT IT:

Repeat this experiment with other animals you find in the schoolyard.

WHAT? You are an animal who lives on Earth one hundred years from now. You go back into time to 1976 and meet an animal that could have been a great grandparent of yours.

SO WHAT? Complete the chart that shows differences in your lifestyles and adaptations:

Change in:	Now	100 years from now
Food		
Predators		
Diseases		
Habitat		
Coloration		
Size		
Method of travel		
Number of young		
Size of young		
Migration		
Others you think of		

What changes have been made in your own life that are different from the life your grandparents lived.

Find a book or magazine article about life in Florida during the 1900's. (like "The Yearling"). What changes do you like? What changes don't you like?

NOW WHAT?

Using any materials you can find in the schoolyard or building, construct the animal you have been pretending to be. Carefully show all of its adaptations.

ANOTHER WAY TO LOOK AT IT:

How does your "new" animal communicate with other animals? Make up "sound" words and write a short, imaginary conversation between you and a brother. Let a classmate decide your conversation. (Omnomapoetic language--the language of sounds).

Get with three other animal inventors and work out a survival system for all of your animals. How will they be interdependant?

WHAT? What kinds of social systems will animals have in the future? What adaptations will make them better able to live in a changing environment?

SO WHAT? Ants, bees, birds and many kinds of mammals have developed social systems that increase the chances of the population surviving. Design a social structure for animals of the future considering:

Dominance
Feeding
Movement
Reproduction
Rhythms
  Time of feeding
  Time of reproducting
  Time of other activities
Migrations or homing
Other factors

NOW WHAT?

Write a story about the way this new animal behaves and why it does things differently than it does now.

ANOTHER WAY TO LOOK AT IT:

Find a specific place or habitat on your schoolyard and describe the behaviors an animal would need to be successful there. What animals are successful today? What are some of the reasons for their success? Will they be successful in the future too?

UNIT TOPIC: TREES

INTRODUCTION

Tree. What a strange word when it is all alone. Tree. We are used to seeing pine tree or oak tree or Christmas tree, but never just tree. Tree?

This unit is about trees. What are some of the ways trees have done something for you today? List them on the board or on a sheet of paper. Where did the paper come from; where did the pencil come from? See how close a tree always is to your life?

Trees are very important to Marion County. They provide lots of jobs. Name some jobs that are directly related to trees.

Trees can do things for people free that would cost lots of money if there were not any trees. Trees clean the air and can help clean the water. Trees reduce noise pollution and add a great deal of beauty to make our lives better.

As you do the different activities in this unit, you will learn more about that wonderful plant - tree.

WHAT? Read the poem, "My Tree". Someone cared about this tree. Find a tree you see every day. Get to know it. Observe the tree closely. Feel the tree, touch it, smell it.

MY TREE

This is my tree.
My place to bedone.
My branches for climbing.
My green leaves for hiding in.
My sunshine for reading.
My clouds for dreaming.
My sky sky for singing.
My my tree, my beautiful tree.

SO WHAT?

1. Construct a sketch of the tree using natural charcoal from a campfire or fireplace (provided). Use "natural" materials for your colors, i.e. flowers, berries, rotten wood.

NOW WHAT? Under your sketch, use your pencil or pen.

1. Find a place on the bottom or side of your sketch.
2. Write 1 "naming" word about your sketch.
3. Write a "describing" word about your sketch.
4. Write 3 "action" words about your sketch.
5. Write a short phrase (4 or 5 words) that tells how your sketch affects the rest of your environment. (Any thought you have about your sketch)
6. Write 1 "feeling" word that sums up everything you feel about your sketch. You have just written a poem about your environment.

ANOTHER WAY TO LOOK AT IT:

Pretend you are the tree you have drawn. Tell us about your life, how you feel now, what you enjoy, fear, dislike, like.

WHAT? Trees: Are they nice to have?
Are they useful to our lifestyle?

SO WHAT? How tall is a tree?

a. Measure the length of the tree's shadow in feet.
b. Convert these feet to inches.
c. Set up a yardstick and measure its shadow in inches.
d. Use formula:

Height (Tree) : Shadow (Tree) :: Height (Yardstick) : Shadow (Yardstick)

Height (Tree) : 1200" :: 36" : 42"

$$\text{Height (Tree)} = \frac{1200" \times 36"}{42"} = 1{,}028" \text{ or } 85'8"$$

NOW WHAT? Now in a wooded area measure off an area 100' x 100'. Count all the trees in this area. How many trees are there in a square mile?

ANOTHER WAY TO LOOK AT IT:

1. What are the 2 most numerous kinds of trees on your schoolyard?
2. How many of each of these 2 kinds are there on your schoolyard?
3. Plant 2 young trees on your schoolyard.

WHAT? Trees are important. They help the environment.

SO WHAT?

1. Take the temperature under a tree. Take the temperature in the sun.

2. Examine a leaf from the tree. What do you think the leaf does for the tree?

3. Examine the bark. What does it do for the tree?

4. Examine the roots. What do the roots do for the tree?

NOW WHAT?

1. Look around you. List things made of wood.

2. What foods do we get from trees?

3. Do trees help fight air pollution?

4. Think back to the days of the early settlers....did they depend upon trees? List at least 5 ways.

5. Can you think of other ways trees are important to the environment?

ANOTHER WAY TO LOOK AT IT:

Pretend you are a tree. Act out how you feel about being so important to the environment.

WHAT? How much is a tree worth? How do you measure value when you look at a tree?

SO WHAT?

Divide into small groups and appoint a recorder for each group. See which group can list the most factors that relate to the "value" of a tree. Go outside and assign each group a tree or shrub. Which of the factors listed apply to the value of that particular tree? Which do not? Why?

Would everybody agree with your groups choice of factors that make this tree valuable? Why or why not? Which group was assigned the most valuable tree?

NOW WHAT?

Would you trade that tree for a bottle of soda? A bicycle? A motorcycle? Why or why not?

ANOTHER WAY TO LOOK AT IT:

Suppose you died and came back as a tree. What kind of tree would you want to be? Where would you want to grow?

UNIT TOPIC: ENERGY AND LIFESTYLE

INTRODUCTION

Due to the shortage of fossil fuels, the President of the United States has ordered all cars, trucks, airplanes, power plants that use coal or oil and industries that use fossil fuels shut down, stopped, closed or whatever. Coal and oil products will only be used for the chemicals they contain--for medicines and essential products. THINK ABOUT THAT.

If it sounds scary, it is! Yet, environmentalists have been telling us that we are indeed running out of fossil fuels. We know that petroleum is a "non-renewable" natural resource. If we use it all up in our lifetime, what will our children use for energy? How will their lifestyle be different than ours because of these changes?

Make a list of all the things you have done today that depend directly on petroleum products. Take the items on your list that you consider essential and number them. Arrange this second list in priority order--put the energy item you consider most essential first.

Ask the teacher or group leader to put everybody's first two items on the board or on a chart. Does everyone have the same priorities? Why not? Can you combine items so there are not as many? What will people substitute for these energy dependent items?

There is a lot of talk about "alternative" sources of energy. Research some of these alternatives and make posters showing the advantages and disadvantages of each alternative.

WHAT? Time and energy are often related and determine how we live.

SO WHAT? Many of the energy consuming things we use each day are designed to save us time. Now that evergy is in short supply, we may want to change the way we live so we can balance energy consumed with time saved. Our grandparents lived "harder" lives, but did not consume as much energy. In groups of 4-5 students, compare the time it took your grandparents to do the following tasks with the time it takes you.

Task	Time now	Time then
Heating water for all uses.		
Heating the home		
Washing and drying clothes		
Preparing all meals		
Traveling to and from school		
Cleaning the house (3 children)		
Tasks you think of:		

NOW WHAT?
What did our grandparents do that we could do and save energy? What about time? Would you give up your favorite TV programs to help with the chores?

ANOTHER WAY TO LOOK AT IT:
It costs about $1.00 a day to feed a horse. If everybody on your school bus rode a horse instead, how much would it cost each day? For a year?

Find out what the word efficiency means and apply it to the idea of evergy and time.

WHAT? Water is important to all living things. What if the only energy available to you was solar energy. How could you use it to collect water?

SO WHAT?

1. Choose a sunny day for your experiment.
2. Collect your materials.
   a. Light plastic sheeting about 4 ft. square
   b. Cactus chunks or any moisture collecting plants.
   c. Collecting receptacles (jar or can)
   d. Shovel.

NOW WHAT:

1. Dig a hole about 3 ft. across and about 1 1/2 - 2 feet deep in a sunny and moist place.
2. Place the cactus chunks in the hole.
3. In the bottom of the hole also place the jar or can.
4. Place the plastic over the hole and weight down the edges with rocks.
5. Place a stone in the middle on top of the plastic sheet above the approximate center of the receptacle.
6. Moisture from the soil or plants will be drawn up by the heat of the sun. The cooler air above the plastic will result in condensation - the moisture of which will collect and run down the plastic to the lowest point where it drips off into the container. 1-5 pints of water may be collected in a day.

ANOTHER WAY TO LOOK AT IT:

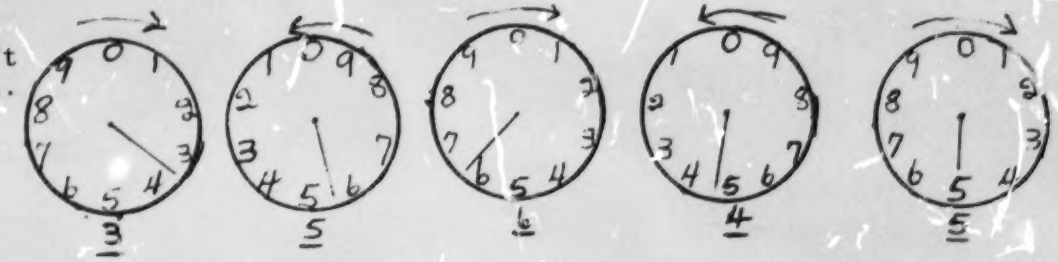
Write a story about how it would feel to be able to get only 1-5 pints of water a day and what you would do with this small amount of water.

WHAT?

Electric meters tell how much energy we use: Here is how to read yours!

SO WHAT?

Read left to right.



NS:
35645

AVERAGE MONTHLY KWH

FACTS:

Range	- 100	Electric heater	28
Electric skillet	- 15	Electric heat pump	760
Toaster	- 4	Electric heat for house	790
Rotisserie	- 12	Central air conditioning	808
Washer	- 7	Room air conditioning	425
Dryer	- 65	Refrigerator	195
Iron	- 14	Freezer	178
Hot water heater	- 300	TV	150
		Stereo	100

NOW WHAT?

If you could only use 1200 kwh each month, what appliances would you use?

ANOTHER WAY TO LOOK AT IT:

Locate your electrical meter at home. Turn off as many energy users as possible. Then see how long it takes your meter's dial to revolve 10 times. Turn on a single light and see how many seconds quicker the dial revolves. Check with other appliances and make your own chart rating appliances like TV, record player, radio, iron, stove and others.

WHAT?

What is the meaning of the word "energy"? What is the importance of "energy"?

SO WHAT:

We will go outside (break up into small groups) and write down the ways we can see energy, hear energy and feel energy. Keep a written record of your thoughts.

NOW WHAT?

1. What did people use 100 years ago to do the same tasks as we just discussed (above)
2. What will people use 100 years from now for energy?

ANOTHER WAY TO LOOK AT IT:

1. List how many of the present uses of energy we could eliminate or cut down on energy uses.
2. How would we survive if our energy sources were all used up?
3. When was the car invented, fan, air conditioner? When was electricity discovered?
4. Rank the uses of energy from most important to least important.

UNIT TOPIC: THE SCHOOL IS OUR HABITAT

INTRODUCTION

Habitat is the place where a living thing makes a habit of being at. For a large part of our day our habitat is the school and its campus. Did you ever think of the area around a school as a campus or a habitat for students?

What are other animals that share this habitat? Do you want to find out more about some of them? Can you think of ways you can change your school habitat and make it better for both you and the plants and animals that also live at your school?

Draw a map of your school habitat as you remember it. Go outside and check the accuracy of your drawing. Get a map of the school site from your maintenance supervisor or the principal. Compare your map to the one drawn by the architect. What things are different between that drawing and yours?

What is there about your school that makes you feel glad? What makes you feel sad?

The lessons in this unit were designed to help you understand more about your habitat and help you understand why you feel the way you do about your school and its campus.

WHAT? How much of the refuse from your school cafeteria can be recycled? How much money could be saved by this action?

FACTS

aluminum....15¢ per lb.
(10 cans per pound)
paper.....05¢ per lb.
glass.....06¢ per lb.

MATERIALS NEEDED

Scale capable of measuring ounces.

Scale capable of measuring pounds.

SO WHAT? Paper, aluminum foil, bottles and cans are natural resources that are a part of your lunch everyday. How many students eat lunch each day? Try to make an estimate of how much paper, aluminum foil, cans and bottles are used each day. How much money is this "trash" worth?

*Hint: Weigh 1 milk carton, then multiply by number of cartons.
Weigh the empty class trash can, then weigh the full class trash can and subtract to determine class paper available for reuse.

Now think of all of the students who are eating lunch everyday throughout America.

Multiply the total number of students eating lunch in your cafeteria by the total number of recyclable items on their tray.

Report on ways paper, cans and bottles can be recycled into new useable items.

NOW WHAT?

Bring in examples of recyclable items being discarded in the cafeteria at school. How long would it take to save enough money by selling this "trash" to buy a minibike? How much paper was used in this class alone or just thrown on the floor? How much money was it worth?

ANOTHER WAY TO LOOK AT IT:

What other areas of the school lend themselves to recycling materials? What can your class do to encourage recycling?

Teacher Note: If time permits, break students into three groups: Administration, Cafeteria Workers, and Students and determine (role-play) where the responsibility rests and who can or should handle it.

WHAT? You have been given the opportunity to plan your school's budget for the next year. Look at last year's budget and decide how you will spend your money differently from last year's planners.

MATERIALS NEEDED

Copies of the school budget. (Simplify the budget, if necessary)

SO WHAT? Take a good look at your school's budget. Study the areas where the money is spent. Take a tour of your school grounds and school plant. List areas that need change. Do you see areas where you could save money by doing things differently? After you study the budget make a chart. Divide it into three columns. List areas that need more money. List areas that need less money. List areas that need the same amount of money. Be prepared to defend your recommendations!

NOW WHAT?

Using the lists you prepared, plan your own school's budget. Visit the library and research salaries of key school personnel. Are they fair?

ANOTHER WAY TO LOOK AT IT:

Think of other ways our schools can operate. Can you think of other ways to achieve the necessary education for all people? Describe a way that you think would be better.

Work in groups of five and plan a school plant exactly as you would like your school to be. Keep in mind the things that are most important to you as a student.

Discuss another school you have been to. What are the similarities and differences between the two schools?

WHAT? Is your school environment the same as it always has been? Will it always be the same as it is now?

SO WHAT? Take a 10 minute trip around the school site:

1. What changes have occurred at your school since school began this year?
   a) Which of these changes have you thought were good changes?
   b) Which of these changes have you thought were bad changes?
2. What changes do you think might occur before you start school next year?
3. What changes would you like to see happen before school starts next year?

NOW WHAT?

If you wanted something changed in your school environment, how could you go about getting this done?

Using your list from #3 above, write beside each change:

a) Who to communicate your idea to get the change
b) What ways you might use to get this idea adopted? Try it!

ANOTHER WAY TO LOOK AT IT:

Pretend you are Rip Van Winkle and have slept from 1975 to 2075. What changes have occurred at your school in the last 100 years? (Consider the grounds, the people, and the building.)

WHAT? Is your school environment the same as it always has been? Will it always be the same as it is now?

SO WHAT? Take a 10 minute trip around the school site:

1. What changes have occurred at your school since school began this year?

   a) Which of these changes have you thought were good changes?
   b) Which of these changes have you thought were bad changes?

2. What changes do you think might occur before you start school next year?

3. What changes would you like to see happen before school starts next year?

NOW WHAT?

If you wanted something changed in your school environment, how could you go about getting this done?

Using your list from #3 above, write beside each change:

a) Who to communicate your idea to get the change
b) What ways you might use to get this idea adopted? Try it!

ANOTHER WAY TO LOOK AT IT:

Pretend you are Rip Van Winkle and have slept from 1975 to 2075. What changes have occurred at your school in the last 100 years? (Consider the grounds, the people, and the building.)

WHAT? How are the natural areas around your campus being used?

SO WHAT?

1. Make a survey of natural areas around your campus. How are these areas being used? Make a map showing these areas and label the ways they are being used.

2. How could these areas be more effectively used? Try and find two ways that you think the area could be better used.

3. How might these areas be used in the future: In a bad way? Think of one bad way each area might be used.

NOW WHAT?

If there are good uses and bad uses for these areas in the future, what can you do to try and get the area to be used in the best way?

ANOTHER WAY TO LOOK AT IT:

Think about natural areas in your city. (Using a city map, shade in natural areas.) What uses do they serve? Could they be put to better use? Do you think that your city plans to keep these areas natural? If you want them to stay natural, what can you do? DO IT!

WHAT? Take a good look at your school. Study it as if you were seeing it for the first time.

SO WHAT? What things do you see that you like? What do you see that you dislike?

Survey your school site in teams and record your findings.

Things I Like	Things I Don't Like	How to Change

NOW WHAT?

What can you and your class do to change the things you feel are not right?

ANOTHER WAY TO LOOK AT IT:

Using materials found on the school site, make displays, collages, or drawings showing what you like and do not like about your school site. Get permission to put them in the school board's meeting room!

WHAT? What do you see and how do you feel about your school environment?

*If the students are to write outdoors, be sure they have something to write on.

Teachers Note:

Haiku would have to be explained before this activity.

Haiku - 3 lines
Line 1 - 5 syllables
Line 2 - 7 syllables
Line 3 - 5 syllables

SO WHAT? Take a 10 minute walk outdoors or around your school. Find a comfortable spot and sit down. Imagine a 5 foot circle around you. You may outline the circle with a piece of string or by scratching the earth with a stick.

* What does life in this little circle feel like?
* What can you do in your circle?
* How long would you like to live in your circle?
* Closely examine your circle. List the living creatures who share it with you.
* Invite 2 human friends over. How does your space feel now? Invite 2 more.

NOW WHAT?

Either discuss in your group or write a haiku about your feelings in your circle. Use natural things found in your circle to make a drawing about your feelings. Compare your work with others.

ANOTHER WAY TO LOOK AT IT:

Write a free verse poem or story about your "environment". Make a collage or illustration to go with it.

*Compare various "environmental circles". How do your feelings change? Why? Are some circles more desirable? Why?

* Suppose you were a member of the school staff (principal, teacher, janitor). How would you look at and feel about this area?

UNIT TOPIC: ENERGY CONSERVATION, CAR-POOLING

INTRODUCTION

What are some of our energy problems? Can we solve them? List some problems on the board that the class feels are problems they or their family face.

What is the problem?

Is this really a problem?

Who does it affect?

What is the cause?

What can be done to reduce or solve the problem?

One problem that is currently receiving a lot of attention is the gasoline shortage and the very high prices consumers are being forced to pay for gas. One response to this situation has been the increasing popularity of car pools. The lessons in this unit will help you understand more about car pools and even help you set one up at your school. Car pools can lead to all kinds of strange things.

WHAT?

Could car pools be used by the teachers at your school to save gasoline?

SO WHAT? Most teachers drive to work, although a few may car pool. Using a city map, find where the teachers at your school live and make up groups that could probably ride together.

Divide the class into about 5 groups. Divide the city into areas for each group; each area must use the school as its vocal point. Locate the home of each teacher on one of the maps and then combine all the locations on a single map. Each group should prepare a new map of their sector of the city showing where teachers live near each other. How many car pools can you arrange?

NOW WHAT?

Present your findings to the teachers in the sector you studied. Give them the names and phone numbers of teachers they might want to car pool with.

ANOTHER WAY TO LOOK AT IT:

Work out possible routes which the car pool could take to school. Try to make it the best route possible considering all the factors which your groups feel should be considered.

What kind of rewards might the principal offer for persons who form car pools?

Prepare a "Fact Sheet" on car pools and distribute it to teachers.

WHAT?

What effect does the burning of gasoline have upon life in our environment?

NOW WHAT? Gather leaves from some plants along a well traveled road or highway and also some leaves from plants away from a road. Smear them across a clean sheet of white paper. What happens? What differences if any do you observe?

SO WHAT?

What conclusions do you have about the effects of automobiles upon your environment?

ANOTHER WAY TO LOOK AT IT:

What effects do you think these automobiles might have upon you and your health? How about other means of transportation? What effects do they have upon your environment?

WHAT?

The pen is mighter than the sword.

* If you want the entire class to work together, have small groups work on each area or method of advertisement. This would enable you to control the time element better.

SO WHAT? What does the statement above mean? Now that you see the importance of car pooling, how will you try to influence others?

1. Discuss the ways ideas are brought to the public's attention. (Billboards, radios, TV, cartoons, posters)

2. Divide into groups - each group is responsible for some method of advertising for car pooling. Decide on a slogan either by groups or as a class. Develop your campaigns.

NOW WHAT?

Share your efforts. Discuss the results. Have your ideas come across as you intended? Were the advertisements "catchy" enough? Revise them if necessary.

ANOTHER WAY TO LOOK AT IT: Contact the local radio, TV, and newspaper people in charge of advertisements. Find out how you would prepare an ad to be used - discuss costs, etc. Where else would you advertise? Develop a campaign for your school. Do it! Discuss its results.

WHAT?

Do car pools help save energy? What is the first step in finding out?

SO WHAT? Most teachers at this school drive to work - very few probably car pool. Certain information is needed to arrange car pools. What is it and how do we get it?

1. Determine a method of gathering information needed from teachers (survey, interview, etc.)

2. Determine what information is needed in order to arrange car pools (Teacher's names and addresses, miles driven from home to school, make of car, mpg, if they do ride with someone else).

NOW WHAT?

Make a list of teachers at your school. Use your method of gathering information to get answers to your questions.

ANOTHER WAY TO LOOK AT IT:

1. Look at your survey results. Which 5 cars seem to get the best mpg? Find some similarities among these cars.

2. Car pooling involves people cooperating with others. What habits or other activities of teachers should be considered when organizing car pools.

3. How does the car pools of others affect you today? Tomorrow? Ask 3 drivers you know how they feel about car pools and why they feel that way. Are they looking toward tomorrow?

4. Write an attitudes survey about car pools. Have 20 adults and 20 teenage drivers fill it out. Do both groups feel the same or differently about car pools? Can you explain this?

5. Pretend you are Teacher X. For you to car pool, you must get up 20 minutes earlier. How do you feel about car pools? 30 minutes earlier? 45 minutes earlier? An hour?

WHAT?

Can car pools really save gas? How can we find out?

SO WHAT: Compute the miles per gallon for a car that travels 300 miles on 15 gallons of gas. What if this same car carried 4 people instead of 1? How much gas would have been used per person?

About how many miles per gallon do the cars or car in your family get?

Plot the fuel consumption at various rates of speed using the information under "facts".

Facts
car X

Rate of speed	Miles per gallon
30 mph	16
40 mph	18
50 mph	20
60 mph	16
70 mph	12

NOW WHAT?

With the information from task #2 and #3 plot the miles per gallon for the average teacher's car. Plot a system having two teachers riding together. How much will this save? Three teachers riding together, how much gas would be saved?

ANOTHER WAY TO LOOK AT IT: Take the information gained and present it to the teachers. Try to encourage your teachers to "double up" to save energy. Can you think of other means of transportation for the community that would use even less gas per person?

How valuable is your time? Traveling 30 miles at 60 miles per hour you will arrive in 30 minutes; at 50 miles per hour you will arrive in 35 minutes. You will lose 4 miles per gallon also. Is it worth it? When do you think it would be worth it?

WHAT?

Car pooling is one suggested solution to the problem. John Rich does not like riding with others in his expensive gas guzzling Eldorado. He says that he will not car pool with anyone because he has plenty of money and does not need to.

Teacher should guide small or large group discussions of this question after students have finished it.

SO WHAT?

1. Do you think it is right for John Rich to be able to ride alone since he can afford it?

2. If you feel it is not right for him to be able to use gas purely for his own wants, who should tell him that he should not do this.

NOW WHAT?

The President of the U.S. has decided that the way to keep Americans from using too much gas is to let the price go up as high as it will go. (Say as high as $1.00 or $1.50 a gallon).

1. Do you feel that this is a good policy?

2. In a group of 4 other students pick one of the following roles to play and discuss your feeling about the President's policy:
   a) Teacher
   b) Truck driver
   c) Farmer
   d) Doctor
   e) Lawyer

ANOTHER WAY TO LOOK AT IT:

Pretend that you and 4 other students are advisors to the President. Discuss possible ways to keep Americans from using too much gas and then find a policy you all agree to advise the President to follow.

UNIT TOPIC: LAND USE AND YOU

INTRODUCTION

The Marion County Zoning Commission has re-zoned an area next to your school to allow a two-hundred unit "Low Cost Housing Complex For the Aged" to be constructed.

How would you like to live next to more than 400 old people? What problems do you think such a project will cause? What benefits will it create?

Discuss the following problems and do some of the activities in this unit on land use. This unit will help you understand some of the problems associated with development and help you find ways to solve some of these problems.

PROBLEMS FOR DISCUSSION

The re-zoning will de-value the land around the school. Construction on the proposed site will have potential ecological effects. The housing complex will create a burden on the sewage and water systems. There will be a great deal of noise pollution during construction. The proposed complex will take over a "natural" recreation area. The development will increase the need for police and fire protection.

WHAT? How can you estimate the populations of animals or plants in a certain area or habitat?

SO WHAT? Select a habitat you want to study. Measure and stake off part of your habitat 1 meter square.

Record the following information on a data sheet:

Name as many of the producers as you can.

Estimate the number in the total area (habitat).

Estimate or measure the height of the tallest and shortest producer.

Then, name the consumers in the area, the number of consumers, the smallest and largest consumers.

Find as many decomposers as possible. Name some.

NOW WHAT?

Construct a food chain using the information you gathered. What was the use of this land in the past? Find some evidence to support your hypothesis. How will this land be used after the proposed housing project? Will this change affect the organisms you studied? How?

ANOTHER WAY TO LOOK AT IT:

Using natural materials found in the area, construct an animal adapted to this habitat 100 years from now.

Pretend you are that animal. Write a short story about how you feel as your home and neighborhood is being destroyed.

WHAT? How would people you know react to a situation like this? (Apartment complex to be constructed near your school site)

SO WHAT?

1. Write how you feel as a student. How would this change affect you, if any?

2. Write how your parents would feel.

3. Write how you would feel if one of the families moving into the complex was related to you.

4. Write how you would feel if you were one of the people moving into the complex.

NOW WHAT?

Compare your feelings with your classmates. Discuss your differences of opinion and decide which ones are helpful, which ones are not.

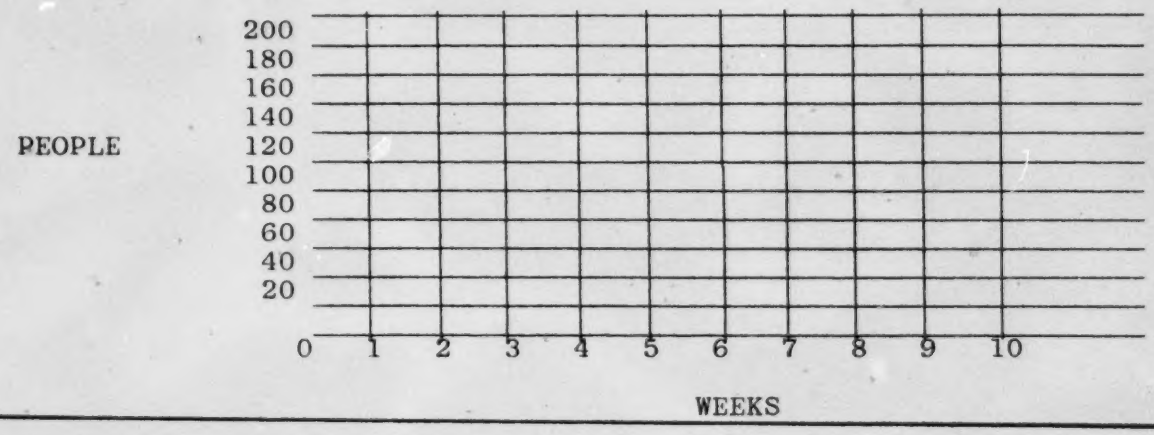
ANOTHER WAY TO LOOK AT IT:

1. You may want to compose your feelings as a student in a letter to the editor of your local newspaper. Maybe this will stimulate other members of the community. (Write "pro" and "con" feelings.)

2. Write your fire department and police department. Inquire about their present workload and how or if this new complex will affect them.

WHAT? Land Use: A 200 unit low-cost housing complex has just been built in your neighborhood. Each week 20 more people move in.

SO WHAT? Plot people vs. weeks



NOW WHAT?

How much additional city drinking water is needed each week for these extra 20 people?

(Each person uses about 100 gallons of water each day.)

ANOTHER WAY TO LOOK AT IT:

1. Have any people moved away from your neighborhood in the last 6 months? How many?

2. What was the population of Florida in 1960?

3. What was the population of Florida in 1970?

WHAT? There is a meeting of the zoning commission and you want to participate!

FACTS

There is a large need for housing of this type.

****

Property in the neighborhood will lose its value

****

The Development will use an additional 50,000 gallons of water each day.

****

Police and fire departments will have to hire more people and raise taxes.

****

The construction will destroy a neighborhood park.

****

If this is not built, many jobs will be lost and people will go on welfare.

SO WHAT? Elect 5 class members to a "Marion Zoning Commission". Divide the rest of the class into people for the change and people against the change. Encourage them to research facts and feelings about this new development. Each side should choose a spokesperson for the formal hearing. The Commissioners should understand the pro's and con's of the issue.

Let the spokesperson for each side present their case. The commissioners can then vote, but should explain why they voted as they did.

NOW WHAT?

Suppose you disagree with the commissions decision. What can you do now? Can you appeal?

ANOTHER WAY TO LOOK AT IT:

Many developers apply for after-the-fact permits. What does that mean? Stage a mock trial where a developer is tried by a judge and jury for filling in 10 acres of swamp land without a permit. Develop a plan to make your school site more useful to the neighborhood.

UNIT TOPIC: GARBAGE

INTRODUCTION

People study cultures that no longer exist by looking at things left behind by primitive tribes and societies. We have learned a lot about Florida Indians by looking in shell mounds. Shell mounds were like garbage dumps for the Indians that lived along Florida's coast before white men came to the "sunshine state".

In St. Augustine, a city work crew recently found an old well that probably went dry and the Spanish settlers used it for a garbage dump. Arcelogists (people who study old cultures) are now busy digging up all kinds of things from the old well. They use these things to help explain about the culture and society that once lived in St. Augustine.

Suppose 500 years from now some people discover a dump near Ocala that people in the 1970's used to put some of their throw-aways. Develop a list of things people might find in this dump 500 years from now. Remember that lots of throw-aways will decompose or rust away in that length of time.

Using the list you developed, make some observations about the culture and society that inhabited the Ocala area in the 1970's. Write a story about a boy or girl your age who lived during this period of time. Be certain to base your story only on the artifacts unearthed in 2470 and the generalizations you were able to make about that group of people.

What differences will there be in garbage dumps 10 years from now? 50 years?

WHAT? What are we going to do with garbage? What do we do with the garbage we are producing now? What should we do with it?

SO WHAT? Each year billions of dollars worth of materials and hundreds of non-renewable natural resources are disposed of as--garbage. What alternatives are there?

Divide into teams of 4-5 students. Each team gets 10 3 X 5 cards and each card represents $10,000. Teams must decide how to spend the $10,000 among two urgent county needs: garbage disposal and building recreation areas for children. The choices being considered are:

	Cost	Environmental Effect	Amount left for Students
Burn garbage	$3,000	Air pollution	$7,000
Burn garbage	5,000	Possible water pollution	5,000
Recycle garbage	9,000	None	1,000

After your team has decided how to spend the money discuss your decision with the teacher (Council Mayor). Each team gets to present their decision and the reasons for the decisions to the Mayor. Then the whole class gets to vote on the "best" ways to spend the money.

NOW WHAT?
What is more important to you, keeping taxes low or protecting your environment? Ask your parents what they think. What would you give up to help your folks pay more taxes for a cleaner environment? For better schools?

ANOTHER WAY TO LOOK AT IT:
Either draw or construct a super garbage disposal that creates no environmental problems. Explain how it works to another student. Challenge the other student to find any problems it creates.

Find out how your city and county deal with their garbage problems.

WHY? Why do I have to pay 25¢ for 30 sheets of paper? Why must I pay 10¢ for a "skinny" newspaper?

FACTS

52 weeks in one year

Ocala Star Banner weighs 5 ounces.

It takes 30 years for a pine seedling to reach pulp-wood size.

One acre of land can grow about 500 trees.

SO WHAT?

Count the newspapers used in the homes for one week. Using the weight of an "average" newspaper, determine the approximate weight of the newspapers each family uses in one year. Total the newspaper weight of all the students and determine the total per year in tons.

If it takes seventeen trees to make one ton of newsprint, how many trees were used to make the newspapers used by the families of our class this year? What happens to most of these used newspapers? How many acres does it take to grow the trees needed for these newspapers? How long did it take to grow them?

NOW WHAT?

List the ways you could "save a tree" and still enjoy reading the paper. Why don't we run out of paper?

ANOTHER WAY TO LOOK AT IT:

Break into two groups. The first group is a very busy, wealthy population who can not be bothered about saving the environment. The other group represents environmentalists who try to convince the first group to stop being selfish clods. Have each person in the first group write an argument for not recycling paper. Then pass the paper to a person in the second group who must then give an oral or written rebuttal.

WHAT? Litter is one of the biggest pollutants of a school campus.

SO WHAT? Draw a rough map of your school site showing the parking lots, playgrounds, and buildings. Divide into teams and mark the location of any litter you find on the map. You might want to use different colors for different kinds of litter. Why is there more litter in some areas than in others? Can you classify this litter by source (students vs. non-students or classroom stuff or lunchroom stuff)? Suggest ways the littering problem on your campus can be reduced.

NOW WHAT?

Select an area of the campus that your class wants to clean up. DO IT! Keep records of what you find.

ANOTHER WAY TO LOOK AT IT:

Make a list of items that you find around campus. Determine the source of this litter. Take action to prevent future littering problems.

WHAT? Garbage by any other name is still_____!

MATERIALS

Roll of newsprint
(cartoon)
sheets of large
construction paper
(billboards)
drawing paper-
posters.
Crayons, paints, etc.

If a film strip
is to be made, equip-
ment will be needed!

SO WHAT? Trash, or litter, has become important to everyone. Many ways have been developed to bring ideas to people. What are some ways you have heard about trash recently?

Break into groups - one for each method of public advertising (posters, radio ads, TV ads, cartoons, billboards).

Decide on a slogan either as a group or as a class. Develop an advertising campaign in your particular mode.
DO IT!

Share your efforts.

NOW WHAT?

What things must be considered in preparing an advertising campaign? Compare the campaigns-which would appeal to students? Adults? Rich people? Etc.?

* Teacher Note:

This activity takes more time than you might expect. Be sure to allow enough time to complete activities.

Ideas might include a disc jockey or TV person coming in and working with your students.

ANOTHER WAY TO LOOK AT IT:

Contact your local TV and radio stations and newspapers. Inquire about how they produce their advertisements. Go and observe the production of an advertisement. Report back to the class on what you see and learn. Actually write an advertisement for radio and request that they use it. Do a poster campaign for your school.